What is claimed is:

1. A microfluidic device, comprising:

a first gas actuator to provide a gas pressure sufficient to move first sample material between first and second spaced apart locations of the microfluidic device;

a second gas actuator to provide a gas pressure to move second sample material between third and fourth spaced apart locations of the microfluidic device, the second gas actuator being spaced apart from the first gas actuator.

2. The microfluidic device of claim 1, wherein the first location is spaced apart from at least one of the third and fourth locations.

3. The microfluidic device of claim 1, wherein the first location is spaced apart from both the third and fourth locations.

4. The microfluidic device of claim 1, wherein the second location overlaps the third location and the second sample material comprises at least a portion of the first sample material.

5. The microfluidic device of claim 1, wherein the first location comprises a first sample processing zone and the first sample material comprises processed sample material prepared at the first sample processing zone.

6. The microfluidic device of claim 5, wherein the first sample processing zone is an enrichment zone and the first processed sample material comprises enriched sample material.

7. The microfluidic device of claim 5, wherein the first sample processing zone is a cell lysing zone and the first processed sample material comprises intracellular material.

8. The microfluidic device of claim 5, wherein at least one of the second, third, or fourth locations comprises a detection zone configured to obtain data indicative of the presence of a sample material.

9. The microfluidic device of claim 1, wherein the first and second gas actuators each comprise a heat source in thermal contact with a volume of gas, whereby actuation of the heat source of a respective gas actuator causes the gas pressure provided by the gas actuator.

10. The microfluidic device of claim 1, wherein the device comprises a substrate and the first, second, third, and fourth locations and the first and second gas actuators are integral with the substrate.

11. The microfluidic device of claim 1, further comprising a valve disposed to isolate the second gas actuator from the first gas actuator.

12. A microfluidic device for processing a microdroplet of sample, comprising:

a first gas actuator to provide a gas pressure sufficient to move the microdroplet between first and second processing zones of the microfluidic device; and

a second gas actuator to provide a gas pressure to move the microdroplet between the second processing zone and a third processing zone of the microfluidic device.

13. The microfluidic device of claim 12, wherein the first gas actuator is spaced apart from the second gas actuator.

14. The microfluidic device of claim 13, further comprising a valve to isolate the second gas actuator from the first gas actuator.

15. The microfluidic device of claim 12, wherein the first processing zone is an enrichment zone and the microdroplet comprises an enriched amount of cells.

16. The microfluidic device of claim 12, wherein the second processing zone is a lysing zone and the microdroplet comprises intracellular material released from cells of the first microdroplet.

17. The microfluidic device of claim 12, wherein the third processing zone is a detection zone configured to obtain data indicative of the presence of a sample substance present in the microdroplet.

18. The microfluidic device of claim 17, wherein the sample substances comprise polynucleotides.

19. The microfluidic device of claim 12, wherein the device comprises a substrate and the first, second, and third locations and the first and second gas actuators are integral with the substrate.

20. A method for moving a microdroplet of sample material within a microfluidic device, comprising:

providing, at a first location of the microfluidic device, a first gas pressure sufficient move the microdroplet between first and second processing zones of the microfluidic device; and

providing, at a second, different location of the microfluidic device, a second gas pressure to move the microdroplet between the second processing zone and a third processing zone of the microfluidic device

21. The method of claim 20, wherein the microfluidic device comprises a substrate and the first and second gas pressures are provided by gas actuators that are integral with the substrate.

22. The method of claim 20, further comprising actuating a valve to isolate the second processing zone from the first processing zone.

23. A method for moving a microdroplet of sample material within a microfluidic device, comprising:

providing, at a first location of the microfluidic device, a first gas pressure sufficient to move the microdroplet from a first microdroplet position within the microfluidic device to a second microdroplet position within the microfluidic device; and

providing, at a second location of the microfluidic device, a second gas pressure to move the microdroplet from the second microdroplet position to a third microdroplet position within the microfluidic device.

24. The method of claim 23, wherein the microfluidic device comprises a substrate and the first and second gas pressures are provided by gas actuators that are integral with the substrate.

25. The method of claim 22, further comprising actuating a valve to isolate the second microdroplet position from the first microdroplet position.

26. A microfluidic substrate comprising:

a microfluidic network,

a first gas actuator coupled to said network at a first location, wherein said first gas actuator, when actuated, provides gas pressure to move a microfluidic sample within the network, and

a second gas actuator coupled to said network at a second location, wherein said second gas actuator, when actuated, provides gas pressure to further move at least a portion of said microfluidic sample within said network.

27. The microfluidic substrate of claim 26 further comprising a valve coupled to said network at a third location whereby said valve, when closed, substantially isolates the second gas actuator from the first gas actuator.

28. The microfluidic substrate of claim 26 further comprising a microfluidic process zone to receive and process the microfluidic sample upon actuation of the first gas actuator.